

WHAT IS CLAIMED IS:

1. A color cathode ray tube comprising:
a panel provided with a phosphor screen;
an electron gun for emitting an electron beam
5 toward the phosphor screen; and
a shadow mask assembly located between the
phosphor screen and the electron gun,
the shadow mask assembly including
a shadow mask body having a rectangular effective
10 portion opposed to the phosphor screen and formed
having a large number of electron beam passage
apertures, the effective portion having a major axis
and a minor axis passing through the center thereof and
extending at right angles to each other,
15 a mask frame to which the periphery of the shadow
mask body is fixed, and
an auxiliary mask in the form of a strip extending
in the direction of the minor axis, fixed to a region
containing the minor axis of the effective portion, and
20 having a number of electron beam passage apertures
communicating individually with the electron beam
passage apertures of the effective portion.

2. A color cathode ray tube according to claim 1,
wherein said auxiliary mask is fixed to a region having
25 a width equal to about 1/3 of the length of the shadow
mask body in the direction of the major axis and
situated in a longitudinal central region of

100-15525-11224

the effective portion containing the minor axis.

3. A color cathode ray tube according to claim 2,
wherein said auxiliary mask has a central axis
extending in the longitudinal direction thereof and is
5 located in a manner such that the central axis overlaps
the minor axis of the shadow mask body.

4. A color cathode ray tube according to claim 2,
wherein said auxiliary mask is in the form of a strip
having a lengthwise dimension greater than the length
10 of the effective portion of the shadow mask body in the
direction of the minor axis and a crosswise dimension
smaller than the length of the effective portion in the
direction of the major axis.

5. A color cathode ray tube according to claim 4,
15 wherein said shadow mask body has a skirt portion
provided around the effective portion and bent along
a tube axis, and said auxiliary mask has an effective
portion formed having the electron beam passage
apertures and non-effective portions provided
20 individually at the opposite ends of the effective
portion with respect to the direction of the minor
axis, the non-effective portions of the auxiliary mask
being bent so as to be superposed on the skirt portion
and fixed to the skirt portion.

25 6. A color cathode ray tube according to claim 1,
wherein said auxiliary mask is formed of a material
having a coefficient of thermal expansion substantially

TOP SECRET - 100-55267-2

equal to that of the material of the shadow mask body.

7. A color cathode ray tube according to claim 1, wherein said auxiliary mask has a thickness equal to or greater than that of the shadow mask body.

5 8. A color cathode ray tube according to claim 5, wherein the length of the effective portion of said auxiliary mask in a longitudinal direction thereof is greater than the length of the effective portion of the shadow mask body in the direction of the minor axis.

10 9. A color cathode ray tube according to claim 1, wherein each electron beam passage aperture of the auxiliary mask has an aperture diameter larger than that of each electron beam passage aperture of the shadow mask body with respect to at least one of the 15 respective directions of the major and minor axes.

10. A color cathode ray tube according to claim 1, wherein said auxiliary mask is provided on the electron-gun side of the shadow mask body, and the space between the electron beam passage apertures of 20 said auxiliary mask is smaller than the space between the electron beam passage apertures of the shadow mask body with respect to at least one of the respective directions of the major and minor axes.

25 11. A color cathode ray tube according to claim 10, wherein each electron beam passage aperture of the shadow mask body is formed of a larger hole opening on the phosphor-screen side and a smaller hole

4415323.1221

opening on the electron-gun side, and each electron beam passage aperture of the auxiliary mask is formed of a smaller hole opening on the phosphor-screen side and a larger hole opening on the electron-gun side.

5 12. A color cathode ray tube according to claim 1, wherein said auxiliary mask is provided on the phosphor-screen side of the shadow mask body, and the space between the electron beam passage apertures of said auxiliary mask is greater than the space between 10 the electron beam passage apertures of the shadow mask body with respect to at least one of the respective directions of the major and minor axes.

15 13. A color cathode ray tube according to claim 12, wherein each electron beam passage aperture of the shadow mask body is formed of a larger hole opening on the phosphor-screen side and a smaller hole opening on the electron-gun side, and each electron beam passage aperture of the auxiliary mask is formed of a larger hole opening on the phosphor-screen side 20 and a smaller hole opening on the electron-gun side.

25 14. A color cathode ray tube according to claim 1, wherein said shadow mask body has a plurality of aperture arrays extending parallel to the minor axis and arranged at spaces in the direction of the major axis, each of the aperture arrays including electron beam passage apertures arranged in the direction of the minor axis and bridge portions situated between

adjacent electron beams passage apertures, and
said auxiliary mask has a plurality of aperture
arrays extending parallel to the minor axis and
arranged at spaces in the direction of the major axis,
5 each of the aperture arrays including electron beam
passage apertures arranged in the direction of the
minor axis and bridge portions situated between
adjacent electron beams passage apertures,

each of the electron beam passage apertures of the
10 auxiliary mask having a minor-axis-direction diameter
twice or more as large as the minor-axis-direction
diameter of each electron beam passage aperture of the
shadow mask body, the minor-axis-direction space
between the electron beam passage apertures of the
15 auxiliary mask being twice as long as the minor-axis-
direction space between the electron beam passage
apertures of the shadow mask body,

the bridge portions of the auxiliary mask being
superposed individually on the bridge portions of the
20 shadow mask body.

15. A color cathode ray tube according to claim 1,
wherein said shadow mask body has a plurality of
aperture arrays extending parallel to the minor axis
and arranged at spaces in the direction of the major
25 axis, each of the aperture arrays including electron
beam passage apertures arranged in the direction of the
minor axis and bridge portions situated between

100-13626-121701

adjacent electron beams passage apertures, and
said auxiliary mask has a plurality of aperture
arrays extending parallel to the minor axis and
arranged at spaces in the direction of the major axis,
5 each of the aperture arrays including electron beam
passage apertures arranged in the direction of the
minor axis and bridge portions situated between
adjacent electron beams passage apertures,

10 the effective portion of the shadow mask body
having a superposed region overlapping the auxiliary
mask and a non-superposed region situated outside the
superposed region,

15 a minor-axis-direction space between the electron
beam passage apertures in the superposed region being
twice as long as the minor-axis-direction space
between the electron beam passage apertures in the
non-superposed region, the minor-axis-direction space
between the electron beam passage apertures of the
auxiliary mask being twice as long as the minor-axis-
20 direction space between the electron beam passage
apertures in the non-superposed region,

25 the bridge portions of the auxiliary mask being
located individually on the bridge portions of the
shadow mask body so as to be shifted in the direction
of the minor axis by a margin equal to 1/2 of the
minor-axis-direction space between the electron beam
passage apertures of the auxiliary mask.

TOP SECRET//INVESTIGATIVE